

selectively ion-permeable membrane electrolyte (6) which forms with the porous electrodes (4,5) a mechanically stable composite unit, in which a slit-shaped gas channel (7) formed by the first electrode face (4.2) facing away from the membrane electrolyte (6) and the first housing part (2.1) and is flowed through by a vapor-saturated, ion-generating carrier gas (G,V) with the vapor component, in which a slit-shaped liquid channel (8) formed by the second electrode face (5.2) facing away from the membrane electrolyte (6) and the second housing part (2.2) which is flowed through by the vapor-absorbing solution (S) and the electrodes (4,5) are electrically short-circuited by current lead-in and lead-off systems (9,10) and an external load resistor (11), in which via openings (12.1, 12.2) in the first housing part (2.1) vapor-saturated carrier gas (G,V)<sub>4</sub> with a first vapor partial pressure is fed to the gas channel (7) and a reduced quantity of vapor-saturated carrier gas (G,V)<sub>m</sub> with a second vapor partial pressure is carried off, said first vapor partial pressure being greater than said second vapor partial pressure, via openings (13.1, 13.2); in the second housing part (2.2) an undersaturated solution with elevated vapor concentration and low vapor partial pressure and vapor-saturated carrier gas with the same vapor partial pressure is carried off, so that when use is made of a cation-generating carrier gas with a vapor component and a membrane electrolyte

(6) selectively admitting said cation, cations are formed at the phase boundary (4.1) which is a gas/solid/electrolyte of the first electrode (4) as a result of anodic oxidation with the consumption of carrier gas and vapor from the gas channel (7), these cations migrate through the membrane electrolyte (6) to the second electrode (5) and at its phase boundary (5.2), which is a gas/liquid/solid, increase the concentration of solution flowing in the liquid channel (8) as a result of cathodic reduction with the liberation of an equivalent quantity of carrier gas, while the electrons from the first electrode (4) flow via the current conduction systems (9,10) and the external load resistor (11) to the second electrode (5) or that, when use is made of an anion-generating carrier gas with a vapor component and a membrane electrolyte (6) selectively transmitting said anion, anions are formed at the phase boundary (4.1) which is a gas/solid/electrolyte of the first electrode (4) as a result of cathodic reduction with the consumption of carrier gas and vapor from the gas channel (7), said anions migrate through the membrane electrolyte (6) to the second electrode (5) and at its phase boundary (5.2), which is a gas/liquid/solid, increases the concentration of solution flowing in the liquid channel (8) as a result of anodic oxidation with the liberation of an equivalent quantity of carrier gas, while electrons from the second electrode (5) flow via the current conduction systems (9, 10) and the

external load resistor (11) to the first electrode (4).--

--26. The process according to claim 12 wherein the substance flows which are fed to and carried off from the galvanic reaction cell (40) with external load resistor (4) are formed into an isobaric, ternary substance circuit with external thermal substance decomposition and external phase separation thereby that a heated gas vapor enricher (42) combined with a phase separator, a solution recuperator (43), a solution cooler (44), a phase separator (45), a solution pump (46) and a gas compressor (47), whereby the two-phase mixture (S)r, (G,V)p carried off from the reaction cell (40) is fed to the phase separator (45) and the phases (S)r and (G,V)p are separated, the vapor-depleted gas (G,V)p which is carried off at the head of the phase separator (45) being united with the moderately vapor-depleted gas (G,V)m which is carried off from the reaction cell and the mixture (G,V)x being fed by the gas compressor (47) to the gas vapor enricher (42) and in the gas vapor enricher is conveyed towards the heated vapor-depleting solution (S)r with vapor uptake and the vapor-enriched gas (G,V)r which is carried off at the head of the gas vapor enricher (42) is fed again to the reaction cell (40), while the vapor-enriched solution (s)r carried off from the phase separator (45) is conveyed by the solution pump (46) through the secondary side of the solution recuperator (43) (41) and introduced at the head into the gas vapor enricher

(42) and the vapor-depleted solution (s)p is carried off at the bottom of the gas vapor enricher (42), and is passed through the primary side of the solution recuperator (43) and through the solution cooler (44) and fed again to the reaction cell (40).--

--27. The process according to claim 13 wherein the substance flows fed to and carried off from the reaction cell (50) with external load resistor (56) and connected activation source (57) are formed into an isobaric, ternary substance circuit with the external thermal substance decomposition and external phase separation by the allocation of a heated solution heater (51), a gas vapor enricher (52) combined with a phase separator, a phase separator (53), a solution pump (54) and a gas compressor (55), whereby the two-phase mixture (S)r. (G,V)p carried off from the reaction cell (50) is fed to the phase separator (53) and the phase (S)r and (G,V)p are separated, the vapor depleted gas (G,V)p carried off at the head of the phase separator (53) is united with the moderately vapor-depleted gas (G,V)m carried off from the reaction cell and the mixture (G,V)x is fed by the gas compressor (55) to the gas vapor enricher (52) and in the gas vapor enricher is conveyed towards the heated and vapor-depleting solution (S)r with vapor uptake and the vapor-enriched gas (G,V)r carried off at the head of the gas vapor enricher (52) is fed again to the reaction cell (50), while the vapor-enriched solution (S)r

carried off at the bottom of the phase separator (53) is conveyed by the solution pump (54) through the solution heater (51) and introduced at the head into the gas vapor enricher (52) and the vapor-depleted solution (S)p carried off at the bottom of the gas vapor enricher (2) is fed again to the reaction cell (50).--

--28. The process according to claim 20 wherein the substance flows fed to and carried off from the galvanic reaction cell (40) with external load resistor (41) are formed into an isobaric, ternary substance circuit with external thermal substance decomposition and external phase separation thereby that a heated gas vapor enricher (42) combined with a phase separator, a solution recuperator (43), a solution cooler (44), a phase separator (45), a solution pump (46), and a gas compressor (47), whereby the tow-phase mixture (S)r, (G,V)p carried off from the reaction cell (40) is fed to the phase separator (45) and the phases (S)r and (G,V)p are separated, the vapor-depleted gas (G,V)p carried off at the head of the phase separator (45) is united with the moderately vapor-depleted gas (G,V)m carried off from the reaction cell and the mixture (G,V)x is fed by the gas compressor (47) to the gas vapor enricher (42) and in the gas vapor enricher is conveyed towards the heated vapor-depleting solution (s)r with vapor uptake and the vapor-enriched gas (G,V)r carried off at the head of the gas vapor enricher (42) is fed again to the

reaction cell (40), while the vapor-enriched solution (S)<sub>r</sub> carried off from the phase separator (45) is conveyed by the solution pump (46) through the secondary side of the solution recuperator (43) (41) and introduced at the head into the gas vapor enricher (42) and the vapor-depleted solution (S)<sub>p</sub> is carried off at the bottom of the gas vapor enricher (42), passed through the primary side of the solution recuperator (43) and through the solution cooler (44) and fed again to the reaction cell (40).--

--29. The process according to claim 21 wherein the substance flows fed to and carried off from the reaction cell (50) with external load resistor (56) and connected activation source (57) are formed into an isobaric, ternary substance circuit with external thermal substance decomposition and external phase separation by the allocation of a heated solution heater (51), a gas vapor enricher (52) combined with a phase separator, a phase separator (53), a solution pump (54) and a gas compressor (55), whereby the two-phase mixture (S)<sub>r</sub>, (G,V)<sub>p</sub> carried off from the reaction cell (50) is fed to the phase separator (53) and the phases (S)<sub>r</sub> and (G,V)<sub>p</sub> are separated, the vapor depleted gas (G,V)<sub>p</sub> carried off at the head of the phase separator (53) is united with the moderately vapor-depleted gas (G,V)<sub>m</sub> carried off from the reaction cell and the mixture (G,V)<sub>x</sub> is fed by the gas compressor (55) to the gas vapor enricher (52) and in the gas vapor enricher is

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conveyed towards the heated and vapor-depleting solution (S)r with vapor uptake and the vapor-enriched gas (G,V)r carried off at the head of the gas vapor enricher (52) is fed again to the reaction cell (50), while the vapor-enriched solution (S)r carried off at the bottom of the phase separator (53) is conveyed by the solution pump (54) through the solution heater (51) and introduced at the head into the gas vapor enricher (52) and the vapor-depleted solution (S)p carried off at the bottom of the gas vapor enricher (52) is fed again to the reaction cell (50).--

Please amend claims 10-13 as follows.

Claim 10, line 1, delete "9" and insert therefor --20--;  
line 3, delete "the" and insert therefor --a--;  
line 12, delete "selected".

Claim 11, line 1, delete "characterized" and insert therefor --wherein--;  
line 2, delete "therein that".

Claim 12, line 1, delete "characterized" and insert therefor --wherein--;  
line 2, delete "therein that".

Claim 13, line 1, delete "characterized" and insert therefor --wherein--;  
line 2, delete "therein that";  
line 4, delete "-remaining".

Please rewrite claim 14 in amended form as follows.